

Distributed Command/Control Impacts on NAS Operations, Phase I

Completed Technology Project (2005 - 2005)



Project Introduction

Command and Control (C2) activities abound in the NAS, and significantly influence daily operations and overall NAS efficiency. Since C2 effects are so prominent, development of new operational concepts, and evaluation of proposed changes, requires simulation and modeling capabilities that include C2 effects. Metron Aviation leverages its extensive knowledge of the Command and Control (C2) functions of the National Airspace System (NAS) to develop models that enable realistic NAS simulations. The key innovations of this effort are 1) the implementation of models for NAS ATM C2 processes, and 2) the integration of these models with the NASA Langley Systems Analysis Branch's (SAB) Simulation Environment. The development leverages the following key capabilities: Metron Aviation's extensive experience supporting NAS C2 activities, and Langley's infrastructure for conducting NAS-wide simulations of air traffic. By developing this interaction we enable a system that allows researchers and analysts to evaluate current NAS operations and to investigate future technologies and concepts of operations. These users exploit the system's capabilities to observe NAS behavior and compare the benefits and impacts of operational concepts prior to pursuing implementation in the operational system.

Anticipated Benefits

Potential NASA Commercial Applications: Estimates of ATM costs due to delays range from hundreds of millions of dollars to billions of dollars per year. Several research activities are being pursued to develop new concepts and technologies in an effort to meet the increasing demands. Many of these developments promise to be costly and laborious to implement, and the difficulty of adequately assessing the anticipated impacts creates significant risk operators and users of the NAS. Development of simulation capabilities and benefit assessment methods that include the effects of C2, creates significant commercial demand for accurate and robust C2 modeling capabilities.



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission
Directorate (STMD)

Lead Center / Facility:

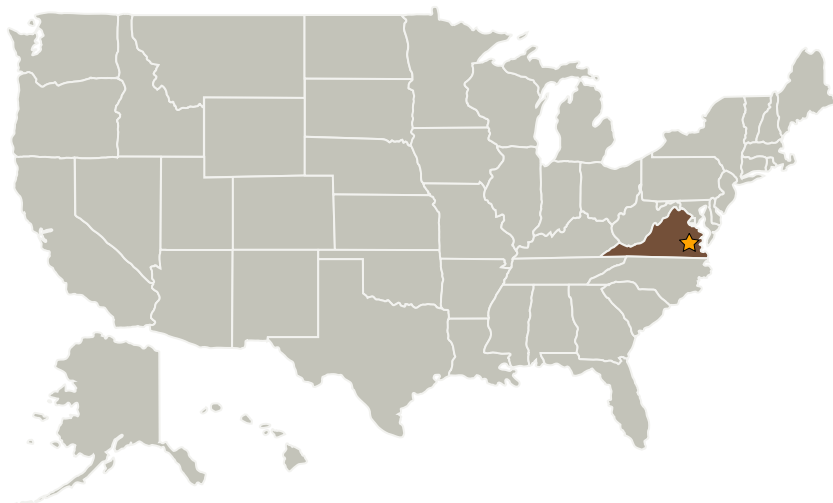
Langley Research Center (LaRC)

Responsible Program:

Small Business Innovation
Research/Small Business Tech
Transfer



Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★ Langley Research Center (LaRC)	Lead Organization	NASA Center	Hampton, Virginia
Metron Aviation, Inc.	Supporting Organization	Industry	Dulles, Virginia

Primary U.S. Work Locations

Virginia

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigators:

Terence R Thompson

Terry Thompson

Technology Areas

Primary:

- TX16 Air Traffic Management and Range Tracking Systems
 - └ TX16.3 Traffic Management Concepts